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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Renato Caretta

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EXAMINER

BELLINGER, JASON R

ART UNIT

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3617

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,558	Applicant(s) CARETTA ET AL.	
	Examiner Jason R. Bellinger	Art Unit 3617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 54-132 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 54-132 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Objections

1. Claims 57-68, 79-90, and 110-121 are objected to because of the following informalities: In claims 57-68, 79-90, and 110-121, the phrase beginning with "with respect to..." should be removed, due to the fact that this phrase is redundant.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 54-132 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rheinhardt in view of Vaughn and in further view of Alonso et al. Rheinhardt shows a wheel having an integral air tank 30, which includes compressed air stored at a higher pressure than the pressure of air retained within the tire 10. A valve 40 communicates between the tank 30 and the interior of the tire 10 to allow pressurized air from the tank to flow into the tire 10 when the air pressure in the tire drops below a predetermined value. The tank 30 includes an inflation valve 20.

Rheinhardt also discloses that the valve 40 may function (i.e. open and close) in response to changes in air temperature. Rheinhardt, however, does not disclose the valve having an elastic element therein with an elastic constant that varies with temperature. Vaughn teaches the use of a valve including two concentrically arranged springs (16 and 20), wherein spring 16 is an elastic element responsive to temperature.

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Namely, the valve will open when the spring 16 responds to a decrease in temperature and vice versa (i.e. the elastic constant increases in response to decreasing temperature and vice versa). Spring 20 is external with respect to spring 16. The elastic element spring 16 is operatively associated with at least one non-deformable closure member (10 and 12) designed to open and close at least one port in the valve.

Therefore, from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the tire inflation system of Rheinhardt with the temperature responsive valve of Vaughn as a substitute equivalent valve structure, dependent upon availability, cost, and the desired factors in determining how the tire pressure is regulated.

Rheinhardt as modified by Vaughn does not disclose the elastic constant of the elastic element (spring 16 of Vaughn) varies within a temperature range of -50 to +50 degrees C. Alonso et al teaches the use of a valve 70 including an elastic element whose elastic constant varies within a temperature range of -1 to +49 degrees C. Therefore, from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the spring of the valve of Rheinhardt as modified by Vaughn from a material having the above properties, dependent on the desired operating range of the valve (i.e. the range of temperature over which the valve will control tire pressure regulation), dependent upon the environment, etc.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the value of the elastic constant of the spring measured at the low range differs from the value measured at the high range by at least 10% and no more than 40%. However, it

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would have been obvious to one of ordinary skill in the art at the time of the invention to provide the spring with elastic constant values suitable to prevent frequent opening and closing of the valve, thus preventing rapid changes in tire pressure.

Rheinhardt as modified by Vaughn and Alonso et al does not specify the ratio between the operating pressure of the tire and the tank being 0.1 to about 0.6, or that the pressure in the air tank is between 8-12 bars. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the relationship between the air tank and tire in such a way to optimize the size to weight ration of the wheel assembly with respect to tire pressure regulation capabilities.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the valve opens with the tire pressure drops by at least 5% with respect to the operating pressure. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange for the valve to open at any suitable pressure difference in order to reduce wear on the tire due to being under-inflated, and to prevent any handling issues with the vehicle due to under-inflated tires.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the second spring (20 of Vaughn) supports 60-95% of the load supported by the elastic element (i.e. both springs) as a whole or that the second spring has a substantially constant elastic constant over the temperature range. Vaughn is silent regarding the elastic constant of the second spring 20; however it is clear by the disclosure of Vaughn that only the first spring 16 has a variable elastic constant over a temperature range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

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invention that the second spring 20 of Vaughn would have a substantially constant elastic constant over the same temperature range as the first spring 16.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the second spring 20 to support 60-95% of the load for the purpose of allowing the first spring to solely respond to temperature changes as opposed to a mix of temperature and load (or pressure) changes.

Response to Arguments

4. Applicant's arguments filed 1 October 2009 have been fully considered but they are not persuasive. The Applicant argues that the objection to claims 57-68, 79-90, and 110-121 should be withdrawn, given the fact that the phrase in question is "necessary in order to maintain consistency with respect to the mathematical relationships and concepts disclosed". However, this is not the case. The mathematical relationships disclosed (namely that the elastic constant value measured at -50 and +50 degrees C differs by at least 10%) are fully and clearly described in the previous portion of the claims. The phrase in question only serves to reiterate a relationship already set forth AND confuses the issue with its redundancy. Therefore, the phrase in question should be removed from the aforementioned claims for clarity.

The Applicant argues that the valve of Vaughn lacks the feature of the elastic element being "operatively associated with at least one non-deformable closure member designed to open and close at least one port" in the valve. However, this is not the case, as explained in the expanded rejection above. Namely, Vaughn shows the

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elastic element 16 “operatively associated” with at least one non-deformable closure member (elements 10 and 12) that are designed to open and close at least one port in the valve.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason R. Bellinger whose telephone number is 571-272-6680. The examiner can normally be reached on Mon - Thurs (9:00-4:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Morano can be reached on 571-272-6684. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason R Bellinger/
Primary Examiner
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